which he was Chairman in 1948–49, and the London Emergency Water Committee. In 1948–49 he was co-opted on to the Standing Committee on Water Regulations of the British Waterworks Association, and so continued until his retirement. He was also a member of the Sub-Committee on Information on Water Resources of the Central Advisory Water Committee, which reported in 1959, and served on many British Standards committees. He was a member of the Hydraulics and Public Health Divisional Board of the Institution from 1951–53, and contributed a number of papers to technical journals.

Elected a Corporate Member in 1922, he became a Fellow in 1936.

He is survived by his widow and a son and daughter.

Michael Noel Varvill, OBE, MC

who was born on 10 November, 1882, died on 27 January, 1968.

Educated at Highgate School and privately, he studied at the Royal Indian Engineering College, Coopers Hill, from 1899–1903.

Railways were to be his life, and his active engineering years were spent overseas.

After six months' practical training in Derby under Mr J. Grinling, District Engineer to the Great Northern Railway, he left for India and in 1904 joined the Indian State Railways, which for the next 20 years he was to serve, mainly on surveys and construction of strategic lines on the North-West Frontier. For the first five years he was engaged as Assistant Engineer on construction and maintenance work on the Quetta–Nushki Railway, the Loi–Shilman line and the Kushalgarh–Kohat–Thali Railway on the Frontier. Surveys and the location and construction of new lines near the Frontier followed from 1909–13—the surveys including 50 miles of mountainous country behind Ras Malan and 1100 miles through remote areas of Southern Persia. From 1913–14 he was Executive Engineer in charge of half the Zhob Valley Railway survey, under Major E. Barnardiston, RE. Among his responsibilities was the location of a line through the vast 'Gat Tangi', a gorge 4000 ft deep. Later he was Superintendent of Works in charge of completion of this project, under the Railway Board, Simla.

During World War I Varvill served in East Africa with the Royal Engineers with the rank of Captain (Temporary) on military railways (1914–18), in charge of part of the survey and earthworks for the Voi line from British East Africa into German East Africa. He became Superintendent of Works of the 330-mile Tanga system of military railways and Tanga harbour works and built a 100-ft span bridge over the Pangani River. On the Dar-es-Salaam Railway

he held a district of about 150 miles, reconstructing destroyed bridges, etc. He was mentioned in dispatches and received the MC.

After the war he spent some months on the construction of liquid fuel installations for the North-West Railway at Karachi, under N. Pearce, (M), Executive Engineer, providing oil storage for up to 15 000 tons. In 1921 he was appointed Executive Engineer to the North-West Railway, in charge of the Karachi District under V. Janson and E. Lister, Deputy Chief Engineers. With a labour force of some 2800 men, his responsibilities included maintenance of 750 miles of track, reconstruction of 62 miles of dismantled branch line and a survey for an additional entrance into Karachi.

The next ten years were spent in Rhodesia, as Chief Engineer of Rhodesian Railways (1925–35). For six months he was Acting General Manager.

Varvill returned home and in 1936 accepted a post as Bursar at Gordonstoun School, where he remained for the next three years.

During World War II he served from 1940–41 in the Pioneer Corps, first as 2nd Lieutenant (Temporary), later as Captain. From 1941–45, with the rank of Lt Colonel (Temporary), Royal Engineers, he was at the War Office as Assistant Director, Transportation (railway construction and maintenance branch). In the early years of the war he was sent with two or three other officers to North Africa to assess the feasibility of opening a new port on the Red Sea as a supply base for air forces in North Africa in the event of the Suez Canal being put out of action by the Germans, as seemed likely at the time. For his services he was awarded the OBE (Military Division) in 1946.

So ended an eventful career. But until his death 23 years later he remained extremely active, and valued his association with the Institution: he was on the Roll for over 60 years. Elected a Corporate Member in February 1908, he became a Fellow in 1922.

He is survived by his widow and three sons.

James Hardress de Warrenne Waller, DSO, OBE, ME, MSc

who was born in Tasmania on 31 July, 1884, died on 9 February, 1968.

After schooling in Tasmania, he worked for a time as a miner, but in 1904 went to Ireland, land of his family, to study engineering at Queen's College, Galway, and in Cork.

Soon after taking his degree and with his interest fired in reinforced concrete, he went to New York to follow up the latest developments there. Later in Dublin he joined Alfred Delap to prepare a design for a bridge competition in Wexford, which together they won in 1913. As a result the two men went into partnership as Delap and Waller, Consulting Engineers—a firm carried on in Dublin to this day.

During World War I, with a commission in the Royal Engineers he saw service in Gallipoli, Serbia and Salonika. He was awarded the DSO and three times mentioned in despatches. While on leave, he was commissioned by the Admiralty in 1917 to design and supervise construction of a concrete ship of 1000 tons. For this project Waller used one of the first examples of pre-cast